REMARKS

Applicants amended the specification and the claims to address the Examiner's concerns and objections. In particular, Applicants amended certain claims to recite a code that is rendered by substantially discrete marks corresponding to pixels that construct the code. Support can be found, e.g., at page 20, lines 14-21, of the specification. Claims 1-36 are presented for examination.

The Examiner rejected claims 10-36 under 35 U.S.C. §112, second paragraph, as being indefinite. Applicants amended the claims to address the rejection, and request that the rejection be withdrawn.

The Examiner rejected claims 1-33 and 36 under 35 U.S.C. §102(e) as anticipated by Hasebe (U.S. Patent No. 6,061,081). But Hasebe does not disclose or suggest printing a code that is rendered by substantially discrete marks corresponding to pixels that construct the code, as recited in the amended independent claims (1, 10, 19, 27, 33, and 36).

Instead, Hasebe describes a marking device having a scan type laser. The device applies a laser beam to a surface of an object, and scans the laser beam to inscribe a graphic. The graphic is not rendered by substantially discrete marks, so Hasebe does not anticipate claims 1-33 and 36, as amended. Applicants request the §102(e) rejection be reconsidered and withdrawn.

The Examiner rejected claims 34 and 35 under 35 U.S.C. §103(a) as being unpatentable over Hasebe in view of Spratte (U.S. Patent No. 5,175,425). Claims 34 and 35 recite a method of printing including providing a printing system for printing an alphanumeric code on a product moving in a direction, the code being constructed from a plurality of pixels, and changing a density of the pixels that construct the code. The Examiner acknowledged that Hasebe does not disclose changing a density of pixels that construct a code and relied on Spratte for the missing feature. But there is no motivation to combine the cited references.

Spratte describes a process for marking semiconductor surfaces by laser bombarding a semiconductor with a series of overlapping melting points. For best results, Spratte explains, the laser bombardment is controlled such that a previously applied melting point is hardened at least partially when applying a melting point, so that the contour of the previously applied point is retained. (See, e.g., Spratte col. 2, lines 60-65.) That is, Spratte is marking the points

individually. Spratte's method is in stark contrast with Hasebe's method, which uses a scan type laser. Indeed, Hasebe explicitly states that certain described problems, such as low production efficiency, are solved by using a scan type laser marking device. (See, e.g., Hasebe col. 2, lines 4-32.) Thus, one skilled in the art reading Spratte would not be motivated to use a scan type laser, and one skilled in the art reading Hasebe would not be motivated to use the method of Spratte. Applicants request the §103 rejection be reconsidered and withdrawn.

Applicants believe the claims are in condition for allowance, which action is requested.

Attached is a marked-up version of the changes being made by the current response. Enclosed is a Petition for Extension of Time and the required fee. Please apply any other charges or credits to Deposit Account No. 06-1050.

Respectfully submitted,

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Version with markings to show changes made

In the specification:

Paragraph beginning at page 1, line 7 has been amended as follows:

This patent application is related to U.S. patent applications entitled "PRINTING A CODE ON A PRODUCT" [(Docket No. LASER1140-1)], Serial Number [_____] 09/704,653 and "PRINTING A CODE ON A PRODUCT" [(Docket No. LASER1140-3)], Serial Number [_____] 09/705,206, both filed concurrently herewith. Both related patent applications are incorporated by reference herein.

Paragraph beginning at page 17, line 4 has been amended as follows:

As illustrated in Figure 4C, one or both of the mirrors can be coupled with a one or more actuators 70 for moving the mirrors. Suitable actuators 70 include, but are not limited to, micromotors. The actuators 70 are controlled by the electronics 26 which can use the actuators 70 to steer the print zone beam to form the print zone 34 on the packaging. For instance, when the print zone 34 has a rectangular shape, the print zone beam can trace a rectangle around the print zone 34 at a speed which causes the rectangle to appear solid to the human eye or at about 100 cycles/second. The [micrometers] micromotors can also be used to steer the printing beam 14 to form the symbols on the packaging.

In the claims:

The following claims have been amended as follows:

1. (Amended) A method for printing, comprising:

providing a printing system for printing a code on a product moving in a direction, the code being constructed from a plurality of pixels in a first data set indicating the positions of the pixels;

generating a corrected data set indicating the position that each pixel would occupy if each pixel was moved at the velocity of the product until the pixel was printed; and

printing the code according to the corrected data set,

wherein the code is rendered by substantially discrete marks corresponding to the pixels.

2. (Amended) The method of claim 1, wherein printing the code according to the corrected data set includes printing a two dimensional trace of pixels.

3. (Amended) The method of claim 1, wherein printing the code according to the corrected data set includes printing a two dimensional trace of spots.

5. (Amended) The method of claim 1, wherein the printing system includes

a laser mounted in a housing, the housing including an optics assembly configured to focus a printing beam produced by the laser onto [a] the product when the product is positioned adjacent the housing.

6. (Amended) The method of claim 1, wherein the printing system includes

a laser configured to produce a printing beam for printing the code on [a] the product;

a housing including a printing beam exit member through which the printing beam exits the housing; and

an optics assembly within the housing, the optics assembly configured to focus the printing beam on [a] the product [which] when the product is adjacent to the housing.

10. (Amended) A printing system, comprising:

a laser for printing a code on a product moving in a direction, the code being constructed from a plurality of pixels in a first data set indicating the positions of the pixels;

electronics for generating a corrected data set indicating the position that each pixel would occupy if each pixel was moved at the velocity of the product until the pixel was printed; and

electronics different than the laser for printing the code according to the corrected data set,

wherein the code is rendered by substantially discrete marks corresponding to the pixels.

11. (Amended) The [method] printing system of claim 10, wherein printing the code according to the corrected data set includes printing a trace of pixels in two dimensions.

12. (Amended) The [method] printing system of claim 10, wherein printing the code according to the corrected data set includes printing a trace of spots in two dimensions.

14. (Amended) The printing system of claim 13, wherein the laser is mounted in a housing, the housing including an optics assembly configured to focus a printing beam produced by the laser onto [a] the product when the product is positioned adjacent the housing.

15. (Amended) The printing system of claim 13, wherein the [printing system includes]

a laser is configured to produce a printing beam, [for printing the code on a product;] and the system further comprises

a housing including a printing beam exit member through which the printing beam exits the housing; and

an optics assembly within the housing, the optics assembly configured to focus the printing beam on a product which is adjacent to the housing.

19. (Amended) A method for printing on a product, comprising:

providing a printing system for printing a code on [a] the product which is adjacent to the printing system and which is moving in a direction relative to the printing system, the code constructed from a plurality of pixels; and

prioritizing [the] an order in which the pixels are printed such that the pixels are printed in a direction which is opposite to the direction which the product moves,

wherein the code is rendered by substantially discrete marks corresponding to the pixels.

20. (Amended) The method of claim 19, wherein an aperture limits [the] an area within which the laser is able to print and the product moves past the aperture.

25. (Amended) The method of claim 19, wherein the printing system includes

a laser mounted in a housing, the housing including an optics assembly configured to focus a printing beam produced by the laser onto [a] the product when the product is positioned adjacent to the housing.

26. (Amended) The method of claim 19, wherein the printing system includes

a laser configured to produce a printing beam for printing the code on [a] the product;

a housing including a printing beam exit member through which the printing beam exits the housing; and

an optics assembly within the housing, the optics assembly configured to focus the printing beam on [a] the product [which] when the product is adjacent to the housing.

27. (Amended) A printing system, comprising:

a laser for printing a code on a product which is adjacent to the printing system and moving in a direction relative to the printing system, the code constructed from a plurality of pixels; and

electronics for prioritizing [the] an order in which the pixels are printed such that the pixels are printed in a direction which is opposite to the direction which the product moves,

wherein the code is rendered by substantially discrete marks corresponding to the pixels.

28. (Amended) The printing system of claim 27, wherein an aperture limits [the] an area of the product on which the laser is able to print as the product moves past the printing system.

33. (Amended) A method for printing, comprising:

providing a printing system for printing an alphanumeric code on a product moving in a direction, the code being constructed from a plurality of pixels; and

printing pixels on the product in a two dimensional trace so as to form the code on the product,

wherein the code is rendered by substantially discrete marks corresponding to the pixels.34. (Amended) A method of printing, comprising:

providing a printing system for printing an alphanumeric code on a product moving in a direction, the code being constructed from a plurality of pixels; and

changing [the] a density of the pixels that construct the code.

35. (Amended) The method of claim 34, wherein the density of the pixels is changed in accordance with [the] an amount of time available to print the code on the product.

36. (Amended) A printing system, comprising:

a laser for printing an alphanumeric code on a product that is adjacent to the printing system and moving in a direction relative to the printing system, the code constructed from a plurality of pixels; and

electronics different than the laser for printing pixels on the product so as to form the code on the product, the pixels being printed in a two dimensional trace,

wherein the code is rendered by substantially discrete marks corresponding to the pixels.